IVKOVIĆ, V.

3001

2

Determination of gold in the presence of copper and cadmium. V. Ivković and S. Sunjić. (*Bull. Soc. chim. Beograd*, 1955, 20, 685—[illegible]) [illegible] results are obtained when Au is determined, in the presence of Cu or Cd, by reduction with alkaline H_2O_2. If HCl or H_2SO_4 is used to dissolve the CuO only 66—73% of Au is recovered, according to the concn. of acid. If 4% H_2SO_3 is used to dissolve the Cu, only 94% of Au is recovered, owing to incomplete coagulation. If HCl is added to the H_2SO_3 as a coagulant, slightly high results are obtained, due to occlusion; the error however, is then less than 0·5% of the amount of Au, if the ratio Au : (Cu + Cd) is 1 : 3

A. R. DENSHAM

BM Rev

IVKOVIC, V.

IVKOVIC, V. Determining antimony sulfide in the presence of antimony oxide. p. 207.

Vol. 20, no. 2, 1955
GLASNIK
Beograd, Yugoslavia

So: Eastern European Accession Vol. 5 No. 4 April 1956

IVKOVIC, V. ; PETRONIC, V.

IVKOVIC, V. ; PETRONIC, V. Clarification of liquids obtained by leaching antimony ores with a sodium sulfide solution. p. 397.

Vol. 20, no. 6, 1955
GLASNIK
Beograd, Yugoslavia

So: Eastern European Accession Vol. 5 No. 4 April 1956

IVKOVIC, V.

SCIENCE

Periodical: GLASNIK, Vol. 20, no. 7, 1955.

IVKOVIC,V.; SAULE, S. Determination of gold in the presence of copper and cadmium. p. 456.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 3 March 1959 Unclass.

YUGOSLOVIA/Analysis of Inorganic Substances. G-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19620

Author : Vlastimir Ivkovic
Inst : Chemical Society (Serbian)
Title : Determination of Antimony Sulfide in the Presence of Antimony Oxide (Preliminary Report).

Orig Pub: Glasnik hem. drustva, 1955, 20, No 3, 207 - 209.

Abstract: The particles of Sb oxide accompaning the Sb sulphide crystals in ores from some occurrences do not dissolve in Na_2S at 0^o. This property difference was used for the determination of the natural Sb oxide in presence of Sb sulfide.

Card 1/1 - 99 -

5(1) YUG/1-59-3-27/57

AUTHOR: Ivković, Vlastimir, Engineer, Professor (Beograd)

TITLE: Producing Chrome Sulfate of a Definite Basicity (Dobijanje hromisulfata odredjenog baziciteta)

PERIODICAL: Tehnika, 1959, Nr 3, pp 470-471 (YUG)

ABSTRACT: Chrome sulfate can at present be produced in Leather Plants by reducing sodium bichromate to chrome sulfate with various organic substances (molasses) or by using sulfur dioxide gas. The process, however, consumes much time and material and it is thus important to devise a technological process for producing chrome sulfate of a definite basicity, particularly 33.3%. Comparison of the various methods shows that the best results are obtained with reduction by sulfur dioxide. Reduction of saturated bichromate solutions, however, leaves some residual chromic acid thus preventing a chrome sulfate solution of definite basicity from being

Card 1/2

IVKOVIC, V.

Production of pure or refined technical sodium hydroxide, p. 655

TEHNIKA (Savez inzenjera i tehincara Jugoslavije) Beograd, Yugoslavia.
Vol. 14, no. 4, Apr 1959

Monthly List of East European Accessions EEAI LC, Vol 8, no 6, June 1959

Uncla.

L 18790-63 EPA(b)/EWT(1)/EDS AFFTC/ASD Pd-4
ACCESSION NR: AR3006436 S/0124/63/000/008/B044/B045

SOURCE: RZh. Mekhanika, Abs. 8B267

AUTHOR: Ivlentiyev, V. S.; Filippov, G. V. 58

TITLE: Study of gas efflux from communicating vessels

CITED SOURCE: Tr. Kuyby*shevsk. aviats. in-t, vy*p. 15, ch. 1, 1962, 99-104

TOPIC TAGS: gas efflux, gas flow, isothermal flow, stationary flow

TRANSLATION: This paper analyzes the stationary isothermal flow of gas from two communicating reservoirs in the atmosphere through an aperture which is in one of them. The flow from one of the containers to the other is also achieved through an aperture in the partition which separates the reservoirs. Four possible schemes of dependence on the relation of the external pressure and the pressure in the neighbors corresponding to four combinations of the critical and pre critical pressure falls at the apertures. Each specific process of efflux consists of several phases corresponding to the indicated system; the number of phases and the order of their occurrence depends on the parameters of the problem and the initial conditions. On the basis of known gas-dynamic formulas for each system a closed system

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L 18790-63
ACCESSION NR: AR3006436

of differential equations is formed. For the case when both the pressure falls are less than critical, the system can be integrated only numerically; for the remaining three cases, the solution is obtained in the form of a finite formula or as integrals, which can be computed by the numerical method. The solution to the derived system of equations makes it possible to obtain the dependence of the pressure in the reservoirs on time. The evolution of the specific process can be calculated in stages.

To verify the method presented, an experimental study of the gas efflux of air from communicating neighboring containers was conducted, with parameters; .43m^3 volume, initial pressure 1.036 kg/cm^2 and temperature 298.5° in a medium with pressure .436 kg/cm^2 with diameter of the external aperture 4mm and the internal 2mm. The pressure in the neighbors during equal intervals of time was measured in the course of 15 min. In the efflux process only two phases occurred, since the critical pressure fall between the neighbors did not occur. The results of the experiment are plotted on the calculated curves which are shown of the dependence of pressure in the containers on the time, corresponding to given initial conditions and parameters of the problem. The coincidence of the results of the calculation with the experimental data are good. O. K. Kudin

DATE ACQ: 28Aug63 SUB CODE: AI, PH ENCL: 00

Card 2/2

IVLENTIYEV, V.S.; FILIPPOV, G.V.

Studying the gas flow in communicating vessels. Izv. vys. ucheb. zav.; av. tekh. 6 no.2:8-10 '63. (MIRA 16:8)

(Gas dynamics)

L 14666-66 EWT(1)/EWT(m)/EPF(n)-2 JD/WW
ACC NR: AT6003083 SOURCE CODE: UR/3181/63/000/015/0171/0176

AUTHORS: Ivlentiyev, V. S.; Filippov, G. V.

ORG: Kuybyshev Aviation Institute (Kuybyshevskiy aviatsionnyy institut); Joint Scientific-Technical Conference on Problems of the Mechanics of Liquid and Gas (Kustovaya nauchno-tekhnicheskaya konferentsiya po voprosam mekhaniki zhidkosti i gaza)

TITLE: Pressure equalization in connected containers

SOURCE: Kuybyshev. Aviatsionnyy institut. Trudy, no. 15, pt. 2, 1963. Doklady kustovoy nauchno-tekhnicheskoy konferentsii po voprosam mekhaniki zhidkosti i gaza (Reports of the Joint scientific-technical conference on problems of the mechanics of liquid and gas), 171-176

TOPIC TAGS: adiabatic expansion, thermodynamics, pressure distribution

ABSTRACT: The process of pressure equalization between two adjacent volumes is studied during a polytropic process $\frac{p}{\gamma^n} = \frac{p_0}{\gamma_0^n}$,

Card 1/2

The analysis is carried out for both critical and subcritical flow conditions. The time-pressure history of each volume after the equalization process has started is given by

$$\tau = \frac{a_1}{A_{\text{закр.}}} \frac{2n}{n-1} \left(\frac{1}{p_1^{\frac{n-1}{2n}}} - \frac{1}{p_{01}^{\frac{n-1}{2n}}} \right) \qquad \tau = \frac{a_1}{A_{\text{докр.}}} \int_{p_{1кр}}^{p_1} \frac{dp_1}{p_1^{\frac{n-1}{2n}} \sqrt{p_1 (p_1 - p_2)}}.$$

The total pressure equalization time is then given as the sum of the above two times. The temperature at the end of the process in the second tank is given by

$$T_2 = \frac{p_{01} - p_1 + \frac{V_2}{V_1} p_{01}}{\frac{p_{01}}{T_{01}} + \frac{V_2}{V_1} \cdot \frac{p_{02}}{p_{02}} - \frac{p_1}{T_1}},$$

and in the first tank by

$$T_1 = T_{01} \left(\frac{p_1}{p_{01}} \right)^{\frac{n-1}{n}}.$$

A numerical example is given for n = 1.4. Orig. art. has: 24 equations, 1 figure, and 2 tables.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 002

Card 2/2

IVLEV, A.I.

Development of mensuration and standardization in the manufacture of instruments has entered a new stage. Izm. tekh. no.7: 1-5 Jl '63. (MIRA 16:8)

(Instrument manufacture) (Standardization)
(Mensuration)

IVLEV, A.I.

Intensification of agricultural production and our objectives.
Izm.tekh. no. 4:3-5 Ap '64. (MIRA 17:7)

ARUTYUNOV, V.O.; GORDOV, A.N.; ZAKS, L.M.; IVLEV, A.I.; KOLLEROV, D.K.

Fundamentals of the organization of a national system of standard information data. Izm. tekh., no.5:1-5 My '64 (MIRA 17:7)

IVLEV, A.I.

Introduction of the international system of units is of great significance for the national economy. Standartizatsiia 28 no.9:3-9 S '64. (MIRA 18:2)

IVLEV, A.I.

For further development of standardization in agriculture.
Standartizatsiia 28 no.4:3-6 Ap '64. (MIRA 17:6)

1. Chlen Gosudarstvennogo komiteta standartov, mer i izmeritel'nykh priborov SSSR.

S/270/63/000/002/013/020
A001/A101

AUTHOR: Ivlev, A. L.

TITLE: On determining elements of mutual orientation of aerial photographs and corrections to measured longitudinal parallaxes

PERIODICAL: Referativnyy zhurnal, Geodeziya, no. 2, 1963, 25, abstract 2.52.176 ("Tr. Mosk. in-ta inzh. zemleustroystva", 1962, no. 15, 129 - 142)

TEXT: The author proposes to use vertical photographs, oriented by the normal section line of base planes, for determination of mutual orientation elements from measured transverse parallaxes and calculation of corrections to longitudinal parallaxes. As the coordinate origin should be taken the main point, the point of ex-nadir and the point of zero distortions. In the given case, terms of second-order of smallness will be absent in formulae of relation between transverse parallaxes and mutual orientation elements, and formulae of corrections will look in the simplest form. The author present derivation of formulae for various directions of normal section lines of base planes and for various coordinate origins.

V. Orlov

[Abstracter's note: Complete translation]

Card 1/1

IVLEV, A.I.

Solve the problem of reliability. Izm.tekh. no.8:4-8 Ag '64.
(MIRA 17:12)

IVLEV, A.M.

Podzol soils of northern Sakhalin. Soob.Sakhal.kompl.nauch.-issl. inst.AN SSSR. no.2:22-33 '55. (MIRA 14:4)

(Sakhalin--Podzol)

IVLEV, A.M.

Dividing Sakhalin into regions according to soil types.
Soob.Sakhal.fil. AN SSSR no.3:51-57 '56. (MLRA 10:7)
(Sakhalin--Soils--Classification)

USSR / Soil Science. Genesis and Geography of Soils. J-2

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77377

Author : Ivlov, A. M.
Inst : Sakhalin Complex Scientific Research Institute AS USSR
Title : Podzolic-Humus-Illuvial Soils of Sakhalin

Orig Pub : Soobshch. Sakhalinsk. kompleksn. n.-i. in-ta. AN SSSR, 1957, Vyp. 5, 125-128

Abstract : The podzolic-humus-illuvial soils widespread on the slopes of Sakhalin are characterized by well-expressed podzolic processes along with the process of formation of a humus-illuvial horizon. The latter is bound by its origin to the accumulation of organic-mineral compounds, as a result of the effect of intrasoil waters. Data are cited of the determinations in the soil of humus, N, C/N, pH, exchange bases, P_2O_5, K_2O and the content in the soil of fractions < 0.001 mm.

Card 1/1

IVLEV, A.M.

Study of the soils of Sakhalin. Pochvovedenie no.2:81-85 F '58.
(Sakhalin--Soils) (MIRA 11:3)

IVLEV, A. M.

Cand Agr Sci - (diss) "Characteristics and genesis of soils of the Susunayskiy Ridge and the character of soil-forming processes under conditions of the southern part of Sakhalin." City of Novo-Aleksandrovsk, 1961. 22 pp; (Academy of Sciences USSR, Siberian Division, Sakhalin Complex Scientific Research Inst); 200 copies; price not given; (KL, 10-61 sup, 221)

IVLEV, A.M.

Kuybyshev District. Gor. khoz. Mosk. 37 no.7:24-29 Jl '63.
(MIRA 16:11)

IVLEV, A.N., inzh.

Adjusting directional angles at points of underground trilateration networks. Izv. vys. ucheb. zav.; gor. zhur. 6 no. 12:54-58 '63. (MIRA 17:5)

1. Universitet druzhby narodov imeni Patrisa Lumumby. Rekomendovana kafedroy geodezii.

IVLEV, A.N., inzh.

Method of recalculating mine orientations with the help of hypothetical sides. Izv. vys. ucheb. zav.; gor. zhur. 7 no.5:38-40 '64. (MIRA 17:12)

1. Universitet druzhby narodov imeni Patrisa Lumumby. Rekomendovana kafedroy marksheyderskogo dela.

IVLEV, A.P.; ASHUKIN, D.I., konsul'tant; VINOKUROVA, Ye.B. [literaturnaya zapis']; TAMAROVICH, M.A., redaktor; KONYASHINA, A., tekhnicheskiy redaktor.

[Under the city streets] Pod ulitsami goroda. Moskva, Izd-vo ministerstva kommunal'nogo khoziaistva RSFSR, 1954. 47 p. (MLRA 8:1)

1. Nachal'nik ekspluatatsionnogo uchastka vodostochnoy seti Moskvy (for Ivlev). 2. Glavnyy inzhener kontory ekspluatatsii moskovskogo tresta "Gordoreksploatatsiya." (for Ashukin)
(Moscow--Sewerage)

L 59241-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pt-7 IJP(c) GS
ACCESSION NR: AT5007937 S/0000/64/000/000/0507/0512

AUTHOR: Abroyan, M. A.; Gerasimov, V. P.; Zheleznikov, F. G.; Zablotskaya, G. R.; Ivanov, N. F.; Ivlev, A. V.; Komarov, V. L.; Kuznetsov, V. S.; Latmanizova, G. M.; Royfe, I. M.; Solnyshkov, A. I.

TITLE: High-current injector of a linear accelerator with strong focusing

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 507-512

TOPIC TAGS: linear accelerator, strong focusing accelerator, electron optics

ABSTRACT: Conditions governing injection in linear proton accelerators determined the requirements on the ion beam, which were of the following order: energy, 700 kev; beam current, 400 milliamperes; beam diameter, 10 millimeters; pulse duration, 10-15 microseconds; energy stability; 0.5%; angular divergence, $\pm 5 \cdot 10^{-3}$ radian. The principal difficulties occur in the development of a system for producing and forming an ion beam with a large current from a powerful stabilized high-voltage source. For particle energy of 700 kev, a variation of the open machine is chosen which ensures good operational characteristics. In the case of large currents, the effect of the beam's spatial charge is substantial and must be taken into account. It

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L 59241-65

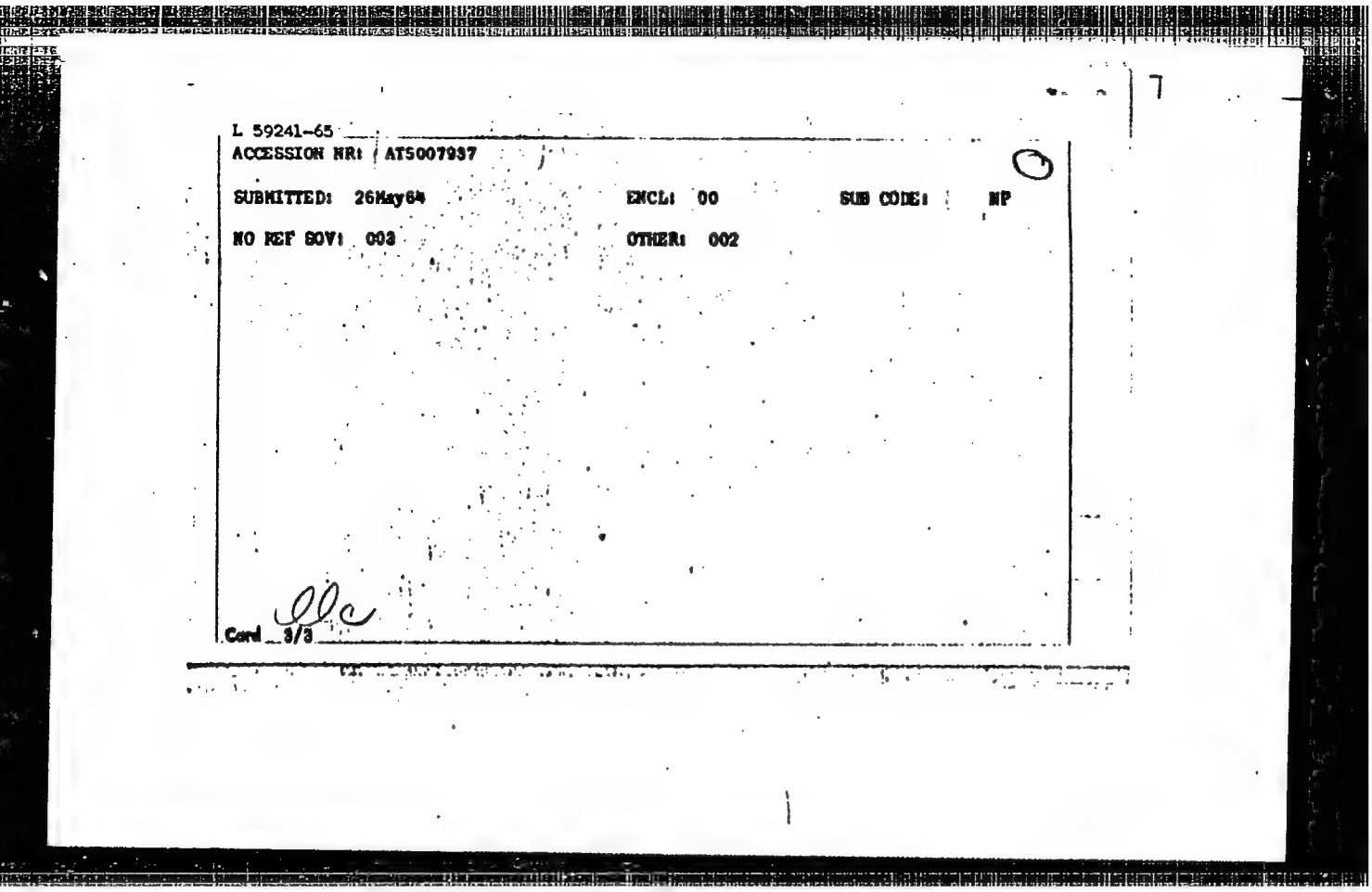
ACCESSION NR: AT5007937

3

considerably complicates the design of the ion-optical system. Experimental testing of the selected version of the optical system for a proton beam with a current of the order of 0.5 ampere confirmed the correctness of the theoretical conclusions and indicated the possibility of producing a proton injector with the above parameters. The author discusses the following topics: design of a system for forming the beam; the experimental setup (injector power supply, high-voltage stabilized power supply circuit, ion source, and current characteristics); the results of the measurements (e.g. current density distribution over tube cross-section). "In conclusion, the author thanks I. F. Malyshev for his constant interest and cooperation during the work, and also R. P. Zaytseva for doing the computer calculations." Orig. art. has: 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical Equipment, GKAE SSSR)

Card 2/3



L 59241-65
ACCESSION NR: AT5007937

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 003 OTHER: 002

Card 1/3

USSR/Physics - Plasticity FD-3092

Card 1/1 Pub. 85 - 7/16

Author : Ivlev, D. D. (Moscow)

Title : Theory of simple deformation of plastic bodies

Periodical : Prikl. mat. i mekh., 19, Nov-Dec 1955, 734-735

Abstract : In the present note the author generalizes the theorem of A. A. Il'yushin concerning simple loading ("Theory of small elastic plastic deformations," ibid., 10, No 3, 1947) to the case of the dependence of s_i-e_i represented in the form of a polynomial. He shows that for any joint system of deformations of a given body for given dependence s_i-e_i represented in the form of a polynomial there exists a unique complex load for which simple deformation holds true in the body. He indicates that this load is practically nonessential. Three references, all to A. A. Il'yushin (e.g. "Relation between stresses and small deformations in mechanics of continuous media," ibid., 18, No 6, 1954).

Institution :

Submitted : May 25, 1955

Name: IVLEV, D. D.

Dissertation: Approximate solution of problems in determining the elasto-plastic condition of bodies by a small parameter method

Degree: Cand Phys-Math Sci

~~Affiliation~~ defended at: Moscow State U imeni M. V. Lomonosov, Mechanicomathematical Faculty

~~Defense~~ Publication Date, Place: 1956, Moscow

Source: Knizhnaya Letopis', No 51, 1956

IVLEV, D.D.(Moskva).

Bulging of eccentric pipes. Izv.AN SSSR,Otd.tekh.nauk no.10:112-116 O '56. (MLRA 10:1)

(Pipe) (Deformations (Mechanics))

PA - 2165

AUTHOR IVLEV, D.D.

TITLE On the Loss of Bearing Strength in the Case of Rotating Disks of nearly Circular Shape (O potere nesushchey sposobnosti vrashchayushchikhsya diskov blizkikh k krugovomu)

PERIODICAL Izvestiia Akad.Nauk SSSR, Otdel.Tekhn., 1957, Nr 1, pp141-144 (U.S.S.R.)

Received 3/1957 Reviewed 4/1957

ABSTRACT The loss of the bearing strength in the case of compact rotating circle-like disks was investigated in which the loss occurs when the plastic zone reaches the exterior boundary of the disk. At first the case is examined in which the equation of the exterior boundary runs as follows. $r = a + d \cos 2\theta$ (d = const.). Here a denotes the radius of a circular disk, r denotes the current radius of the disk, $R(\theta)$ - the radius of the plastic zone of the disk. The derived equation shows that the plastic zone L^o reaches the free boundary of the disk at a point where the disk is narrowest. Next, the case is investigated, in which the equation of the exterior boundary runs as follows. $r = a + d \cos \theta$ (d = const.). This case corresponds to a circular disk on a wave of the excentricity d. From the equation derived herefor and from its first approximation, it can be seen that the plastic zone L^o will reach the exterior boundary of the disk at a point which is at the smallest distance from the point of support of the disk. Deviations from the original radius of an order of magnitude of 0.05% lead to an important modification of the form of the plastic zone. A violation of the form and imperfectness of the seat of

Card 1/2

PA - 2165

On the Loss of Bearing Strength in the Case of Rotating Disks of nearly Circular Shape.

the disk exercise but little influence on the loss of the bearing strength (only up to 3%).
(2 illustrations)

ASSOCIATION Not given
PRESENTED BY
SUBMITTED 15. 10. 1956
AVAILABLE Library of Congress.

Card 2/2

IVLEV, D.D. (Moskva).

Bulging of thick-walled pipes weakened by flat axisymmetric grooves. Izd. AN SSSR. Otd. tekh. nauk no.5:113-118 My '57. (MLRA 10:8)
(Pipe) (Deformations (Mechanics))

IVLEV, D.D.

AUTHORS: Yershov, L.V. and Ivlev, D.D. (Moscow). 24-7-18/28

TITLE: Elastic-plastic stress state of a hollow thick walled toroid subjected to the effect of internal pressure. (Uprugo-plasticheskoye napryazhennoye sostoyaniye pologo tolstostennogo tora, nakhodyashchegosya pod deystviyem vnutrennego davleniya).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.7, pp.129-131 (U.S.S.R.)

ABSTRACT: The problem is solved in the linear formulation on the basis of the assumption that the toroid curvature is small. The toroid under consideration is assumed as being formed by the rotation of a ring with the radii a and b about some axis located in the plane of the ring. There is one Slavic reference.

1/1

SUBMITTED: April 22, 1957.

AVAILABLE:

AUTHORS: Yershov, L. V. and Ivlev, D. D. (Moscow). 24-8-26/34

TITLE: On buckling of a thick walled tube subjected to the effect of internal pressure. (O vypuchivanii tolstostennoy truby, nakhodyashcheysya pod deystviyem vnutrennego davleniya).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.8, pp.149-152 (U.S.S.R.)

ABSTRACT: The problem is considered of buckling of thick walled tubes in the case of plane deformation under the effect of internal pressure. Tubes are investigated which are made of material which gets work hardened, using the theory of small elastic-plastic deformations and also tubes made of ideally plastic material. It is assumed that the load is sufficiently intensive to be able to disregard the elastic load relief of the tube during buckling. A tube made of ideally plastic material will lose its stability at a lower internal pressure than that at which it will lose the carrying capacity and, therefore, the qualitative picture of the plastic flow of material of a circular tube will be near to that described in an earlier paper of the author (4). There are 2 figures and 5 Slavic references.

Card 1/1

SUBMITTED: December 28, 1956.
AVAILABLE: Library of Congress

IVLEV, D. D.

AUTHORS: Yershov, L.V. and Ivlev, D. D. (Moscow). 24-9-22/33

TITLE: Elastic-plastic state of an elliptical tube subjected to the effects of internal pressure. (Uprugo-plasticheskoye sostoyaniye ellipticheskoy truby, nakhodyashcheysya pod deystviyem vnutrennego davleniya).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.9, pp. 130-134 (USSR)

ABSTRACT: The elastic-plastic stresses and strains are investigated in a tube with a small ellipticity for plane deformation subjected to an internal pressure. The problem of loss of carrying capacity of such tubes is also considered. The solution is sought near the known axis-symmetric stress state of a circular tube subjected to an equal internal pressure in the case of plane deformation, using formulae from the book "Theory of Plasticity" of Sokolovskiy, V.V. (eq.1.1).
There are 2 figures and 2 Slavic references.

SUBMITTED: February 5, 1957.

AVAILABLE: Library of Congress.

Card 1/1

AUTHOR: Ivlev, D. D. (Moscow) 24-10-16/26

TITLE: Forcing of a thin blade (wedge) into a plastic medium. (Vdavlivaniye tonkogo lezviya v plasticheskuyu sredu)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.10, pp.89-93 (USSR)

ABSTRACT: The linearised theory is considered of pressing in a thin, well lubricated, wedge into a plastic medium for cases of plane deformation and plane stress states; the elastic deformations are considered negligibly small compared to the plastic ones. The solution is sought by using the equilibrium equations (1.1) (in which it is assumed that the process of pressing in is sufficiently slow and that the inertia forces can be disregarded), the plasticity conditions, Eq.(1.2) and the plastic flow condition of Mises, Eq.(1.3) with the boundary conditions expressed by Eqs.(1.4) and (1.5) and also the kinematic boundary conditions. Formulae are derived which enable easy determination of the relevant stresses. Acknowledgments are made to G. S. Shapiro for his useful comments. There are 3 figures and 1 Slavic reference.

SUBMITTED: June 26, 1957.
AVAILABLE: Library of Congress.
Card 1/1

YERSHOV, L.V.; IVLEV, D.D.

Elastic and plastic conditions of a conical tube under the action of an inside pressure. Vest.Mosk.un.Ser.mat.,mekh., astron.,fiz.,khim. 12 no.2:51-52 '57. (MIRA 10:12)

1.Kafedra teorii uprugosti Moskovskogo universiteta.
(Elastic plates and shells)
(Plasticity)

IVLEV, D.D.

Approximate solution of plane elastoplastic problems in the theory of ideal plasticity by means of a small parameter. Vest. Mosk. un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:17-26 '57.
(MIRA 11:9)

1.Kafedra teorii uprugosti Moskovskogo gosudarstvennogo universiteta.
(Plasticity)

IVLEV, D.D.

40-5-17/20

AUTHOR: IVLEV, D.D. (Moscow)

TITLE: On the Determination of the Displacements in L.A. Galin's Problem (Ob opredelenii peremeshcheniy v zadache L.A.Galina)

PERIODICAL: Prikladnaya Mat.i Mekh.,1957,Vol.21,Nr 5,pp.716-718 (USSR)

ABSTRACT: In a paper of 1946 Galin [Ref.1] considered the problem of a thin plate with a circular aperture of radius r which is drawn in two directions. The pressure is prescribed on the contour of the aperture. In the former paper the semiaxes of the ellipses into which the circular aperture is distorted were calculated. For the calculations an elasto-plastic deformation was assumed, and the compressibility of the material in the plastic zone was neglected. Now the author shows that, because of the variation of the Poisson coefficient during the transition from the plastic into the elastic range, also the components of tension and deformation are discontinuous on the boundary of the range. He shows that in this way a discrepancy with the results of Galin's former paper arises which the author tries to clarify in the present paper. The clearing up of the discrepancy is possible by consideration of the compressibility of the deformed material in the plastic zone. A method for the approximative calculation of the defor-

Card 1/2

On the Determination of the Displacements in L.A.Galin's Problem 40-5-17/20

mation of the circular opening is given which possesses a good convergence.
There are one figure, no tables, and 4 references, 3 of which are Slavic.

SUBMITTED: July 25, 1957

AVAILABLE: Library of Congress

Card 2/2

PA - 3014

AUTHOR IVLEV, D.D.,

TITLE Approximate Solution of Elastic-Plastic Problems of the Theory of Ideal Plasticity.
(Priblizhennoye resheniye uprugo-plasticheskikh zadach teorii idea'noy plastichnosti -Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 294-296, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT The author tries to find the solution of the elastic-plastic problem in the form of series according to the powers of a certain parameter.

δ. $\sigma_{ij} = \sum_{n=0} \delta^n \sigma_{ij}^{(n)}$, $\sigma_{ii} = \sigma_\rho$, $\sigma_{jj} = \sigma_\theta$, $\sigma_{ij} = \sigma_{ji} = \sigma_{\rho\theta}$.

The present paper only investigates the following problems. By the theory of the two-dimensional deformed condition MISES' and SAINT-VENANT's conditions of plasticity are essentialy identical $(1/4)(\sigma_\rho - \sigma_\theta)^2 + \tau_{\rho\theta}^2 = 1$. And in the theory of the two-dimensional condition of stress SAINT-VENANT's condition of plasticity $(1/4)(\sigma - \sigma_\theta)^2 + \tau_{\rho\theta}^2 = [1-(1/2)(\sigma_\rho+\sigma_\theta)]^2$ with $\sigma_\theta > \sigma_\rho > 0$. All quantities of the above equations are dimensionless. After a few steps of computation the boundary conditions of the solid under consideration are obtained, they are rather comprehensive and are given explicitly. On the boundary of the plastic domain the solutions for the elastic domain go steadily into one another. Also the linearized equations for this transition are put down explicitly. These conditions for the steady transition of σ_ρ and $\tau_{\rho\theta}$ represent the boundary conditions for the determination of the stresses in the elastic domain, and the

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Approximate Silution of Elastic-Plastic Problems of the Theory of Ideal Plasticity. PA - 3014

conditions of transition for σ_θ serve for the determination of ρ_{sn}. Determining thr equation for the limit of theplastic domain in such problems is the most difficult and the most interesting task. Finally the approximate solutions for the following special cases are given. Biaxial stretching of a thick plate with circular holes (of the radius a) by the powers P_1 and P_2. Biaxial stretching of a thin plate with circular holes of the radius a by the powers P_1 and P_2. Biaxial stretching of a thin plate with elliptical holes by the powers $P_1 d_2$ and $P_2 d_2$, the direction of which together with the principal axes of the ellipse include the angle θ_0. Eccentric tube under the action of an interior stress p_0. (Without illustrations).

ASSOCIATION State University, Moscow.
PRESENTED BY NEKRASOV, A.I.,
SUBMITTED 9.10.1957
AVAILABLE Library of Congress
Card 2/2

PA - 3133

AUTHOR: IVLEV, D.D.

TITLE: ~~The Approximated~~ Solution of the Problems of the Theory of the Small Elastic-Plastic Deformations.
(Priblizhennoye resheniye zadach teorii malykh uprugo-plasticheskikh deformatsiy. Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 3, pp 527 - 528 (U.S.S.R.)
Received: 6 / 1957 Reviewed: 7 / 1957

ABSTRACT: The author seeks the solution of the problem in a form of series according to a certain parameter δ :

$$\sigma_\varrho = \sum_{n=0} \delta^n \sigma^{(n)}, \ldots) \quad u = \sum_{n=0} \delta^n u^{(n)}, \ldots) \quad e_\varrho = \sum_{n=0} \delta^n e_\varrho^{(n)}$$

If at $\delta = 0$ an axially symmetric state of stress prevails,

$$u^0 = -c/\varrho, \quad e^0_\varrho = -e^0_\vartheta = c/\varrho^2, \quad e_i{}^0 = (2/\sqrt{3})(c/\varrho^2), \quad c = \text{const}$$

applies in the case of a plane deformation while compressibility is disregarded.
By insertion of the above mentioned development in series into the relations which express the connection of the stress and the de-

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The Approximated Solution of the Problem of the Theory of the Small Elastic-Plastic Deformations.

formation in the theory of the small elastically plastic deformations, with $\sigma_i = Ae_i^{\varkappa}$ the following is obtained:

$$\sigma_Q^{(n)} - \sigma_\Theta^{(n)} = 4B\varkappa_Q^p e_Q^{(n)} + F_n, \quad \tau_{Q\Theta}^{(n)} = B_Q^p e_{Q\Theta}^{(n)} + \Phi_n$$

Here $B = (A/3)(2\sigma/\sqrt{3})^{\varkappa-1}$, $p = 2(1-\varkappa)$ is true and the functions F_n and Φ_n depend upon the components of not more than the $(n-1)$-th approximation.

The author now determines the n-th approximation on the assumption that the $(n-1)$-th approximation is known. The relation:

$$\sigma_Q^{(n)} - \sigma_\Theta^{(n)} = 4B\varkappa_Q^p R' \dot{\Theta} + F_n$$

$$\tau_{Q\Theta}^{(n)} = B_Q^p \left[(QR'' + R' - R/Q)\Theta - (R/Q)\ddot{\Theta}\right] + \Phi_n, \text{ is then found.}$$

Here the stroke denotes the differentiation with respect to Q and a raised point denotes the differentiation with respect to θ.

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With $\Theta = \cos m\theta$ or $\Theta = \sin m\theta$ the homogeneous equation:

The Approximated Solution of the Problemsof the Theory of the Small Elastic-Plastic Deformations.

$$\varrho 4R^{IV} + 2(p+3)\varrho^3 R''' + \left[p^2+6p+5+2m^2(1-2\varkappa)\right]\varrho^2 R'' + \varrho R' - \left[(p^2-1) - 2m^2(2\varkappa-1)(p+1)\right] + R\left[m^4 + (1-p^2) - (2-p^2)m^2\right] = U_n$$

is obtained from the expressions mentioned above and from the conditions of equilibrium.
Here the right part of this equation is a known function of the radius ϱ. With $R = \varrho^k$ the following results from the last equation:

$$k^4 + 2pk^3 + \left[p^2 - 2 - 2(2\varkappa-1)m^2\right]k^2 - 2p\left[1 + (2\varkappa-1)m^2\right]k + \left[(1-p^2) - (2-p^2)m^2 + m^4\right] = 0 .$$

The latter equation now permits the following decomposition into factors:

$$(k^2 + pk + a + ib)(k^2 + pk + a - ib).$$

Card 3/4 By means of the easily found general solution of the last men-

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The Approximated Solution of the Problems of the Theory of the Small Elastic-Plastic Deformations.

tioned equation, the following problems, among others, may be solved: Excentric tube under exterior and interior pressure, elliptical tube, biaxial expansion of a thick plate with circular or elliptical tube. (With 1 illustration).

ASSOCIATION: Moscow State University
PRESENTED BY: NEKRASOV, A.I., Member of the Academy
SUBMITTED: 10 October 1956
AVAILABLE: Library of Congress

Card 4/4

IVLEV, D. D.

AUTHORS: Yershov, L. V., and Ivlev, D. D. (Moscow). 24-1-18/26

TITLE: On the loss of stability of rotating discs. (O potere ustoychivosti vrashchayushchikhsya diskov).

PERIODICAL: Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk, 1958, No.1, pp. 124-125 (USSR).

ABSTRACT: A rotating disc of uniform thickness is considered in a state of equilibrium, wherein inside a certain radius the plastic state of stress has been reached. The equations of equilibrium are set up and the boundary conditions are formulated on the periphery of the disc and at the boundary between the elastic and plastic regions. Solutions are sought in which the disc periphery is distorted from the initial circle into a sinusoidal curve. To each number of waves there corresponds a critical speed expressed as a multiplying factor of a speed parameter. The parameter is the reciprocal of the initial disc radius times the square root of the yield stress divided by the mass density. For the single wave periphery, the multiplying factor is 1.5118. This corresponds to an eccentric shape associated with a resultant force increasing the

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24-1-18/26

On the loss of stability of rotating discs.

eccentricity. Thus, the disc loses its stability.
It is thought that the rotational speed so defined
is its failure speed.
There is one Russian reference.

SUBMITTED: June 30, 1957.

AVAILABLE: Library of Congress.

Card 2/2

IVLEV, D. D.

24-2-26/28

AUTHOR: Ivlev, D.D.

TITLE: Some studies of K. N. Shevchenko relating to the theory of plasticity. (O nekotorykh rabotakh K. N. Shevchenko po teorii plastichnosti).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, No.2, pp. 159-162 (USSR).

ABSTRACT: The work of K. N. Shevchenko (Refs.1-4) is severely criticised and it is shown on the example of the stress epures for a beam subjected to pure bending that the solutions arrived at by means of the equations derived by Shevchenko yield results which do not approach qualitatively the real values, i.e. his equations yield complete erroneous results.
There are 3 figures and 4 Russian references.

AVAILABLE: Library of Congress.

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16(1)

AUTHORS: Ivlev, D.D. and Yershov, L.V. SOV/55-58-2-7/35

TITLE: On the Approximate Solution of Axial-Symmetric Elasto-Plastic Problems by the Method of the Small Parameter (O priblizhennom reshenii osesimmetricheskikh uprugo-plasticheskikh zadach metodom malogo parametra)

PERIODICAL: Vestnik Moskovskogo Universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 2, pp 47-56 (USSR)

ABSTRACT: The axial-symmetric elasto-plastic problem of ideal plasticity theory is solved by the method of the small parameter, whereby the well-known solution for the plane state of deformation serves as zeroth approximation. The material is supposed to be incompressible. As an example the authors determine the elasto-plastic state of a thick-walled tube of conic form which is loaded by internal pressure. The authors thank A.Yu. Ishlinskiy for valuable indications.
There are 3 figures, and 6 references, 5 of which are Soviet, and 1 English.

ASSOCIATION: Kafedra teorii uprugosti (Chair of Elasticity Theory) [Moscow Univ.]

Card 1/2

SOV/24-58-4-33/39

AUTHOR: Ivlev, D.D.

TITLE: Conference on Sustained Static Strength of Turbine Components Working at High Temperatures (Soveshchaniye po dlitel'noy staticheskoy prochnosti detaley turbomashin, rabotayushchikh pri vysokoy temperature)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 149 - 150 (USSR)

ABSTRACT: The Commission on the Strength of Gas Turbines from the Institut mekhaniki AN SSSR (Institute of Mechanics of the Ac.Sc.USSR) (Chairman - Yu.N. Rabotnov) and the Strength Section of the Leningrad Technical Committee on Turbine Construction (Chairman - V.K. Naumov) held a conference during November 20-22, 1957 on the sustained static strength of turbine components working at high temperature. The conference was opened by an introductory speech by the chairman of the Leningrad Technical Committee on Turbine Construction, S.A. Kantor.
The paper by I.A. Oding (Institute of Metallurgy, Ac.Sc. USSR) "Structural Theory of Creep" contained an account of the author's theory.

Card1/7 V.S. Ivanova and L.K. Gordiyenko (Institut metallurgii

SOV/24-58-4-33/39

Conference on Sustained Static Strength of Turbine Components Working at High Temperatures

AN SSSR - Institute of Metallurgy of the Ac.Sc.USSR) in the paper "Experimental Investigation of Some Aspects of the Theory of Structural Creep" described results corroborating aspects of Oding's theory.
L.A. Kuznetsov (Nevskiy metallicheskiy zavod im. Lenina - Nevskiy Metal Factory im. Lenin) in his paper "Problems in the Field of Static Strength of Turbine Components, Working at High Temperature" dwelt on data obtained in Leningrad industrial undertakings indicating the need for further improvement in design and constructional procedure. The basic problem, in the author's opinion, is not so much the investigation of the stresses in individual components as the investigation of the limiting states of actual constructions. The author also noted the need for experimental investigation of model rotors, disks and frameworks of turbines and suggested setting before the Government the question of organising such an assembly in one of the factories with complete centralisation and co-ordination of work in this direction. The author

Card2/7

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Conference on Sustained Static Strength of Turbine Components Working at High Temperatures

G.A. Tulyakov (TsNIITMASh) described the results of an experimental investigation of creep in the boiler steel 1x1 8N 9T(EYaIT) under complex stress conditions.
M.N. Kats (TsKTI im. Polzunov) gave a paper on "Investigation of Deformation and Sustained Strength of Tubes" containing results on the study of creep under complex stress conditions.
A.N. Grubin (Vyssheye Voyenno-morskoye uchilishche im. Dzerzhinskogo - Advanced Naval School im. Dzerzhinskiy) read a paper on "Calculation of the "Fir-tree" Roots of Blades of Gas Turbines in the Creep Deformation Region"
L.M. Kachanov (Leningradskiy gosudarstvennyy universitet - Leningrad State University and TsKTI im. Polzunov) dealt with creep under initial plastic deformation, with a view to calculating the deformation state of components made from special heat-resistant steels.
Yu.N. Rabotnov (Moscow State University, Institut mekhaniki AN SSSR - Institute of Mechanics of the Ac.Sc.USSR) described the results of theoretical and experimental investigations on

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unsteady creep under complex stress conditions. He remarked that there now exists a theory, agreeing satisfactorily with experimental data, which permits the calculation of the stress and deformation state in turbine disks and rotors at high temperatures. In addition he has designed and constructed apparatus for investigating sustained strength and creep of heat resisting alloys under complex stress conditions and a number of valuable results have been obtained with this apparatus.
B.P. Sokolov (TsKTI im. Polzunov) discussed the choice of the nature of loading of components working at high temperatures.
S.V. Serensen (TsIAM) gave a paper "On Constructional Factors of Sustained Static Strength" which described results obtained on low-power turbine equipment.
The paper of N.N. Kalinovskiy dealt with the bearing capacity of turbine rotors.
Many participants remarked on the increasing need for extensive co-ordination of work in the field of strength

Conference on Sustained Static Strength of Turbine Components Working at High Temperatures

of gas turbines.
In the adopted resolutions of the conference, it was recorded that: 1) definite progress has been made recently in the development of theory of creep in metals, particularly as affected by variations of stress and temperature with time. Effective methods based on the calculation of components in various regimes have been evolved. Experimental investigations on creep and sustained strength under complex stress conditions are being made in a number of scientific establishments (MGU, TsNIITMASh, TsKTI, Institute of Mechanics of the Ac.Sc.USSR). The conference noted the extreme importance of a similar series of theoretical and experimental investigations for establishing a more fundamental method of calculation; 2) the institutions LMZ, TsKTI, TsNIITMASh and the Kirovskiy and Nevskiy factories have investigated the stress conditions and bearing capacity of parts and units of gas turbines, both model and full scale, leading to the analysis of a number of problems on the influence of materials and

Conference on Sustained Static Strength of Turbine Components Working at High Temperatures

construction on the strength under operating conditions. These impose a high stress level in existing and projected designs. The conference decided to bring before Government agencies the question of creating a single centre for the production of extensometric equipment.
The conference considered the organisation of similar conferences on separate questions of strength of turbines, in particular, the calling of a conference on the dynamic strength of turbine components.
This is an abridged translation.

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SOV/24-58-4-34/39

AUTHOR: Ivlev, D.D.

TITLE: Co-ordinating Conference on the Strength of Gas Turbines (Koordinatsionnoye soveshchaniye po prochnosti gazovykh turbin)

PERIODICAL: Izvestiya Akademii Nauk USSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, p 150 (USSR)

ABSTRACT: This is a slightly abridged translation.
A co-ordinating conference on the strength of gas turbines, called by the Institut mekhaniki AN SSSR (Institute of Mechanics of the Ac.Sc.USSR), took place at the Institute from November 20-30, 1957. Having considered plans for work in research institutions and factories during 1958, the conference recorded: 1) completely inadequate co-ordination of work on the strength of gas turbines conducted in NII and in factories, as a result of which there is unnecessary parallelism in the work;
2) insufficient foundations for experimental work on sustained strength under complex stress conditions at high temperatures;
3) absence of an All-Union laboratory on extensometry, leading frequently to haphazard work in the production of

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Co-ordinating Conference on the Strength of Gas Turbines

extensometric equipment.
The conference decided: a) to create a working group of the Gas Turbine Strength Commission for the immediate realisation of co-ordinating work in its field; b) to consider the need for setting up by the Institute of Mechanics a central base for the study of sustained strength under complex stress conditions at high temperatures and to put before the Presidium of the Ac.Sc. the possibility of extending the experimental basis of the Strength Laboratory of the Institute of Mechanics; c) to consider the need for the creation of an All-Union central laboratory on extensometry for experimental work on the improvement of extensometric equipment and gauges, for supplying extensometric equipment and gauges in a centralised manner to the undertakings concerned and to enter the corresponding suggestions into Gosplan USSR. The conference set up special working groups and confirmed their leaders.

AUTHORS: Boldyrev, Ye. I. and Ivlev, D. D. SOV/24-58-8-37/37

TITLE: Conference on the Dynamic Strength of Components in Turbo-Machinery (Soveshchaniye po dinamicheskoy prochnosti elementov turbomashin)

PERIODICAL: Izvestiya Akademii Nauk, SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 8, p 160 (USSR)

ABSTRACT: The conference took place in Leningrad between April 15 - 18, 1958. It was organized by the Commission for Gas Turbines (chairman: Yu. N. Rabotnov) and the Leningrad Council for Production of Turbines (chair: Professor S. A. Kantor) with the participation of officers of scientific research institutes, industrial firms and establishments of higher education of: Moscow, Leningrad, Kiyev, Kharkov and other cities. The conference was opened with the paper by F. M. Dimentberg (Institute of Machine Engineering, AS USSR) "Transverse Vibration of Shafts", in which a detailed analysis of modern methods of approach to the problems of transverse vibration of shafts was presented from the designer's point of view. The following papers were then submitted and read:

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Conference on the Dynamic Strength of Components in Turbo-Machinery

I. A. Birger (TsIAM): "Critical speeds of shafts with their associated dynamic systems" - giving the methods of determining these critical revolutions and also the ways of measuring the magnitudes of vibrations. The author gave both the theoretical and experimental approaches.

V. I. Olimpiyev (TsKTI): "Computation of critical speeds in cantilever rotors of built-up form by means of the equivalent simple cantilever" and "Stability of rotors rotating at nearly critical speeds".

V. Ya. Kal'mens (Leningrad Metallurgical Works) "Critical speeds of rotors of large turbo-generators".

A. A. Kolomiytsev (TsIAM): "Vibrations of blades in turbines" in which the resonant vibrations were discussed in detail as influenced by various factors which determine the working conditions and by the geometry of the vanes. A substantial part of the paper dealt with the aerodynamic damping.

V. V. Bolotin (MEI): "Self-induced vibration of slender rotors caused by the internal friction and the allied

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factors", and "Critical conditions for turbine discs whose rigidity varies periodically in the circumferential direction".
The first paper dealt mainly with the effect of hysteresis and other related non-linear factors, while the second represented the results of investigation of critical states of large finned composite discs.
V. M. Marchenko (TsAGI): "On a method of calculating the natural frequencies and modes of vibrations of blades" in which an effective approximate method of solution of the differential equation which describes the natural frequencies and their modes was given.
V. O. Kononenko (Institute of Management, Ac.Sc. USSR): "Resonance - vibration of rotors in relation to the characteristics of the motor" which dealt with the mutual dependence between the motor and the vibrating system and the specific phenomena resulting from this interdependence in the region of resonance.
A. P. Filippov (Hydraulic Machines Laboratory Ac.Sc.USSR): "Combined vibrations of discs and blades in turbo-machines"

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in which the author stressed the importance of treating the disc and blades jointly and showed that this may result in an appreciable lowering of frequencies especially in the case of short blades.
Ye. I. Molchanov (VTI): "Investigation of temperature distribution in the rotors of gas turbines in the cases of steady and unsteady states".
M. L. Kempner: "Vibrations of blades in turbines and the means of combatting them" in which the author has outlined a detailed analysis of a choice of ways resulting in the "tuning-out" of resonance in the fundamental mode, and also stressed the problem of "scatter" of stresses in the blades as a result of change in damping effect at their joints with the disc.
I. V. Bondarenko: "Modern practice in finish of turbine blades".
M. I. Alyamovskiy (TsNII im. A. N. Krylov): "Approximate determination of stresses in the tubes of heat exchangers and in compressor blades during the oscillations under the action of aerodynamic forces".

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P. A. Kashin: "Techniques of measuring deformations of turbine blades".
A. M. Soyfer (Kuybyshev Aëronautical Institute) "Survey of methods for damping of vibrations of blades in aircraft gas turbines".

All these papers were followed by a lively discussion. In resolutions the conference stressed the need for further coordination of efforts in the field of the dynamic strength analysis of turbomachinery. Recognizing the positive work of the Commission for strength analysis of gas turbines, the conference decided as appropriate to rename it into the Commission for Strength Analysis of Turbo-machinery under the auspices of the Department of Technical Sciences of the Ac.Sc. USSR. The conference agreed again on the pressing need for creation of the National Laboratory for the development of strain-measuring equipment.

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1. Turbines--Performance 2. Turbines--Analysis 3. Turbines --Equipment

USCOMM-DC-60040

AUTHOR: Shevchenko, K.N. (Moscow) SOV/24-58-9-28/31

TITLE: Letter to the Editors (Pis'mo v redaktsiyu)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 9, p 151 (USSR)

ABSTRACT: In Nr 2 (1958) of the present journal, a note by D.D. Ivlev, entitled "On Some Papers of K.N. Shevchenko on the Theory of Plasticity" was published. One point which is mentioned in that paper, namely, the fact that there is a discontinuity in the displacement vector on the boundary between the elastic and plastic zone in the case of a plane subjected to a localised force, is treated in the author's paper on p 152 of the present journal (this issue). The present author now argues that: a) Eq (1) in Ivlev's paper is useless; b) Ivlev derives completely incorrect expressions (Eqs 5-7) and ascribes them to the present author; c) Ivlev has not understood the present author's papers.

Card 1/1

AUTHOR: Ivlev, D.D. (Moscow) SOV/24-58-11-27/42

TITLE: One Class of Solution to the General Equations in the Theory of Ideal Plasticity (Ob odnom klasse resheniy obshchikh uravneniy teorii ideal'noy plastichnosti)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 11, pp 107 - 109 (USSR)

ABSTRACT: Von Mises' plasticity conditions are applied to the ideal flow of a rectangular rod compressed by rigid plates; the result is, in fact, a particular case of Prandtl's solution to a similar problem and derives from a previous paper by Ivlev in Prikl. Mat. Mekh., 1958, Nr 5. The basic equations are (1.1) to (1.3); a solution is sought in the form of (1.4). (1.8) derives from the condition of incompressibility and (1.11) from the conditions of plasticity; the rest of the development is routine. Two cases are considered; 1) $a = b$ and 2) $a \neq b$, of which the second is of more interest... Eq.(1.21).

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One Class of Solution to the General Equations in the Theory of Ideal Plasticity SOV/24-58-11-27/42

There are 3 Soviet references.

SUBMITTED: July 14, 1958

Card 2/2

AUTHOR: Ivlev, D.D. (Moscow)

TITLE: On the General Equations of the Theory of Ideal Plasticity and of the Statics of Friable Media (Ob obshchikh uravneniyakh teorii ideal'noy plastichnosti i statiki sypuchey sredy)

40-22-1-6/15

PERIODICAL: Prikladnaya Matematika i Mekhanika, 1958, Vol 22, Nr 1, pp 90-96 (USSR)

ABSTRACT: The general equations of the ideal theory of plasticity were set up by Levi [Ref 1] . However, the plasticity condition given by him is not clear and so complicated that explicit investigations were not based upon it. On the other hand a simpler formulation of the plasticity condition of Mises led to a statically undefined problem the solution of which was considerably difficult. In the present paper now the author tries an analysis of the general initial equations of the theory of ideal plasticity, where as plasticity condition he uses the equations given by Tresk and Saint-Venant and applies the laws for the plastic flow connected therewith. It is shown that in cases in which the plastic state of stress satisfies certain additional conditions the problem is statically completely determined.

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On the General Equations of the Theory of Ideal Plasticity and of the Statics of Friable Media

40-22-1-8/15

In the paper furthermore the general equations of the statics of granular media are investigated, however, only under conditions which correspond to a certain limit state of the stresses. Here it is also shown that under the given conditions the general problem of the statics of granular media is a statically completely defined one. The plastic flow conditions applied by the author which give the conditions for the plasticity are closely connected with the plastic potential. This form is particularly agreeable and suitable, since the work of the stresses is a minimum for corresponding variations of the plastic deformations, so that a connection with the well-known minimum problems of elasticity theory is shown. There are 11 references, 6 of which are Soviet, 1 German, 1 American and 3 are English.

ASSOCIATION: Institut mekhaniki Akademii nauk SSSR (Institute of Mechanics of the Academy of Sciences of the USSR)

SUBMITTED: November 29, 1957

Card 2/2

16(1)
AUTHOR: Ivlev, D.D. (Moscow)

SOV/40-22-4-7/26

TITLE: On Discontinuous Solutions of the Spatial Problem of Ideal Plasticity Theory (O razryvnykh resheniyakh prostranstvennykh zadach teorii ideal'noy plastichnosti)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 4, pp 480-486 (USSR)

ABSTRACT: Under the assumption of complete plasticity the author considers problems in which discontinuity surfaces occur which are symmetric with respect to one axis. The calculations are based on a system of cylinder coordinates and the conditions of plasticity are applied in the form :

$$(1.1)\quad (\sigma_\varrho - \sigma_z)^2 + 4\tau_{\varrho z}^2 = 4k^2 \quad ; \quad \sigma_\theta = \frac{1}{2}(\sigma_\varrho + \sigma_z) + k$$

Here the relations

$$(1.2)\quad \begin{aligned} \sigma_\varrho &= 2k\omega + k\sin 2\theta \quad ; \quad \tau_{\varrho z} = -k\cos 2\theta \\ \sigma_z &= 2k\omega - k\sin 2\theta \quad ; \quad \sigma_\theta = 2k\omega + k \end{aligned}$$

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are valid. Since these relations are entirely analogous to corresponding relations obtained by Prager for the case of plane problems, therefore the corresponding relations of plane problems can be directly transmitted. This transmission, however, is no longer possible for the consideration of deformations. For in plane problems the conditions of equilibrium are differential relations which are satisfied under arbitrary choice of the constants ω and θ. Corresponding facts do not hold, however, for the equilibrium in axial symmetric spatial problems.

It is assumed that a certain surface shows a discontinuity of the state of stress. On the basis of the plasticity conditions of Tresk and Saint-Venant the states of stress on both sides of the discontinuity surface correspond to different edges of the prism, with the aid of which the plasticity condition is interpreted in the space of the main stresses. Two cases are now considered for which in the relation

(2.1) $\sigma_1 = \sigma_2 = \sigma_3 \pm 2k$

either the positive or the negative sign holds. For these special cases the boundary conditions in the point of discontinuity can be brought into the following forms :

(2.11) $[\sigma] = \cos 2\theta \quad ; \quad [\theta] = -2\theta \pm \pi m + \frac{\pi}{2}$

On the basis of these simplifications it is possible to give a geometric construction with the aid of which concrete problems can be solved. Two simple examples were discussed. The calculation, however, leads to rather complicated transcendental relations between the characterizing angles of the plasticity prism. Therefore a numerical evaluation has not been carried out.

There are 4 figures, 1 table, and 9 references, 3 of which are Soviet, and 6 English.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute for Mechanics, AS USSR)
SUBMITTED: February 20, 1958

IVLEV, D.D. (Moskva)

Certain special solutions of the axisymmetric problem in the ideal plasticity theory and generalized Prandtl's solutions for the compression problem of a plastic layer between two rough-surface plates. Prikl.mat. i mekh. 22 no.5:657-672 S-O '58. (MIRA 11:11)
(Plasticity)

IVLEV, D.D. (Moskva)

Building up a theory of ideal plasticity. Prikl.mat. i mekh. 22 no.6:850-855 N-D '58. (MIRA 11:12)
(Plasticity)

14(10)
AUTHOR: Ivlev, D. D.

SOV/20-123-6-9/50

TITLE: On a Particular Solution of the General Equations of the Theory of Ideal Plasticity in Cylindrical Coordinates (Ob odnom chastnom reshenii obshchikh uravneniy teorii ideal'noy plastichnosti v tsilindricheskikh koordinatakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 6, pp 988-990 (USSR)

ABSTRACT: The author first gives the general equations of ideal plasticity in cylindrical coordinates $\varrho\theta z$ in consideration of the plasticity condition of Mises (Mizes). The elastic deformations are assumed to be negligibly small with respect to plastic deformations. The temperature field within the body is assumed to be given, and the influence of temperature is assumed to be reducible to a volume expansion of the material. None of the components depends on the angle θ. Moreover, the author assumes $K_\varrho = K_\varrho(\varrho)$, $K_\theta = 0$, $K_z = \text{const}$. Centrifugal forces, for example, can act in the direction of the ϱ-axis and the gravitational force. The author assumes $T = T(\varrho)$, $\alpha = \alpha(T)$, $k = k(T)$. $k = k(T)$ denotes the dependence of creep strength on temperature.

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Obviously, temperature can depend also on time which is used as a parameter. The equations for the equilibrium are given explicitly, and expressions are deduced for the stresses σ_ϱ, σ_θ, and σ_z and also for the components u, v, w of the rate of displacement. The obtained solution corresponds to a helical plastic flow of an ideal plastic substance between approaching rough surfaces, and it includes many known particular solutions of the plane and of the axical-symmetrical problem of the theory of ideal plasticity. There are 6 references, 3 of which are Soviet.

ASSOCIATION: Institut mekhaniki Akademii nauk SSSR (Institute of Mechanics of the Academy of Sciences, USSR)

PRESENTED: August 1, 1958, by Yu. N. Rabotnov, Academician

SUBMITTED: July 23, 1958

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IVLEV, D. D., Doc Phys-Math Sci (diss) -- "The spatial problem in the theory of ideal plasticity". Moscow, 1959. 3 pp (Moscow State U im M. V. Lomonosov, Mech-Math Faculty), 170 copies (KL,No 26, 1959, 122)

SOV/179-59-1-21/36

AUTHOR: Ivlev, D. D. (Moscow)

TITLE: A Particular Solution of the General Equations of the Theory of Ideal Plasticity in Cylindrical Coordinates under Conditions of Tresca Plasticity (Ob odnom chastnom reshenii obshchikh uravneniy teorii ideal'noy plastichnosti v tsilindricheskikh koordinatakh pri uslovii plastichnosti Tresca)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 132-133 (USSR)

ABSTRACT: The paper is a continuation of previous work (Refs.1 and 2). The stress field is found mathematically and the displacement velocity field is obtained from the conditions of incompressibility and isotropy. There are 2 Soviet references.

SUBMITTED: September 26, 1958.

Card 1/1

AUTHOR: Ivlev, D. D. (Moscow) SOV/179-59-3-20/45

TITLE: The Derivation of the Equations Determining Plastic Flow Under Conditions of Complete Plasticity (O vyvode uravneniy, opredelyayushchikh plasticheskoye techeniye pri uslovii polnoy plastichnosti)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 3, p 137 (USSR)

ABSTRACT: The paper is a continuation of previous work (Refs 1 and 4). The relations given earlier (Ref 1) for determining plastic flow under conditions of complete plasticity are derived by a different method, using the theory of plastic potential (Refs 2 and 3).
There are 4 references, 2 of which are Soviet and 2 English.

SUBMITTED: February 11, 1959

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24.4100

S/170/59/000/06/016/029
E081/E141

AUTHOR: Ivlev, D.D. (Moscow)

TITLE: The Theory of an Axially Symmetrical Stress State under Tresca Elasticity Conditions

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 6, pp 112-114 (USSR)

ABSTRACT: The Tresca plasticity conditions are represented in principal stress space by a prism (Fig 1), the boundaries of which are equally inclined to the axes of the principal stresses σ_1, σ_2 and σ_3. The equilibrium of the plastic body is analysed by adopting cylindrical coordinates and by assuming an associative law of flow. The equation (9) governing plastic flow is derived, and the differential equations (11) established for the displacement velocities u and w. These equations are discussed in relation to the Tresca prism. There are 2 figures and 9 references, of which 3 are English, 4 Soviet, 1 French and 1 German.

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SUBMITTED: June 4, 1959

IVLEV, D.D. (Moskva)

Disintegration of solids. Prikl. mat. i mekh. 23 no.3:618-624 My-Je '59. (MIRA 12:5)
(Solids)

10(2)

AUTHOR: Ivlev, D. D. SOV/20-124-3-14/67

TITLE: On the Relations Which Determine Plastic Flow on the Condition of Plasticity of Tresk and Its Generalization (O sootnosheniyakh, opredelyayushchikh plasticheskoye techeniye pri uslovii plastichnosti Treska i yego obobshcheniyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 3, pp 546-549 (USSR)

ABSTRACT: The author develops relations for the determination of a plastic flow corresponding to the edges of a prism interpreting, in the region of the main stresses, Tresk's plasticity condition (i.e. the condition of complete plasticity). Also conditions for the motion of a loose medium are investigated under the conditions of a limiting state, by which Tresk's plasticity condition is generalized. A figure shows the section of the prism which interprets Tresk's plasticity condition in the region of the principal tresses σ_1, σ_2, σ_3, through the plane σ_3 = const. The system of denotations is explained and the calculation is followed step by step. If the condition of complete plasticity is satisfied, the problem is statically

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determinable. The equation for the determination of the characteristic variety $\Psi(x,y,z)$ is written down as $\Phi[2\Phi^2 - (\text{grad}\,\Psi)^2] = 0$, where $\Phi = \frac{\partial\Psi}{\partial x}\cos\varphi_1 + \frac{\partial\Psi}{\partial y}\cos\varphi_2 + \frac{\partial\Psi}{\partial z}\cos\varphi_3$ holds. The components of the rate of plastic deformation are in this case determined from the incompressibility condition $\varepsilon_x + \varepsilon_y + \varepsilon_z = 0$ and from the isotropy condition (which demands agreement between the directions of the main axes of the stress tensor and the tensor of the rate of deformation). The case $\varepsilon_1 = \varepsilon_2$ is of no particular interest, because it leads to Mises' law of flow, and because the problem becomes indefinite. Next, the general case $\varepsilon_i \neq \varepsilon_k$, $\varepsilon_i \neq 0$ $(i \neq k;\ i,k = 1,2,3)$ is investigated and the corresponding system of equations is determined. From these calculations there follows agreement between the characteristic varieties of the systems of equations for the fields of stresses and the displacement rates. The equation of state of

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the loose medium is written down as $\max\left\{|\tau_n| - \sigma_n \operatorname{tg}\varphi\right\} = k$; here τ_n, σ_n denote tangential and normal stress respectively; k and φ are constants. By considering the aforementioned equation as a "loose potential", it is possible to determine the associated law of motion of the loose medium. There are 1 figure and 2 Soviet references.

PRESENTED: September 30, 1958, by Yu. N. Rabotnov, Academician

SUBMITTED: April 27, 1958

Card 3/3

AUTHOR: Ivlev, D. D.

SOV/20-127-4-13/60

TITLE: On the Isotropic Hardening of Plastic Bodies

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 777 - 779 (USSR)

ABSTRACT: In the present paper, some possibilities of considering the isotropic hardening in the plasticity theory are discussed. For the ideal plastic body, it is assumed that in the process of drawing the stress function $f(\sigma_{ij})$ remains constant. Already in the simplest case of one-dimensional elongation of a test piece, the assumption of a dependence of the hardening on the deformation parameters is necessary. These parameters determine the measure of hardening $W = \int \sigma_{ij} d\varepsilon_{ij}$, ε_{ij} denoting the components of the deformation rate. As W in an ideal plastic flow does not vanish, it is convenient, also in the case of a neutral load, to define the measure of hardening in such a way that it becomes equal to zero in the case of an ideal plastic flow. This determines the flowing condition of a hardening material. It corresponds, over a wide range, to the mechanical properties of the bodies in their nature of ideal plastic flow,

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and the plasticity conditions by Tresk can be applied to them. The flow can be represented in the area of principal stresses (Fig 1). The measure of hardening is further expressed by the characteristic elongation of Tresk's prism, and the case of an elongation of a one-dimensional test piece, of a two-dimensional deformation, and of an axisymmetric spatial deformation is dealt with. From these considerations it results that the solutions of the theory of ideal plasticity keep a limited validity, and that they are realized at the instant of the beginning plastic flow. There are 1 figure and 4 references, 1 of which is Soviet.

PRESENTED: April 1, 1959, by Yu. N. Rabotnov, Academician

SUBMITTED: March 26, 1959

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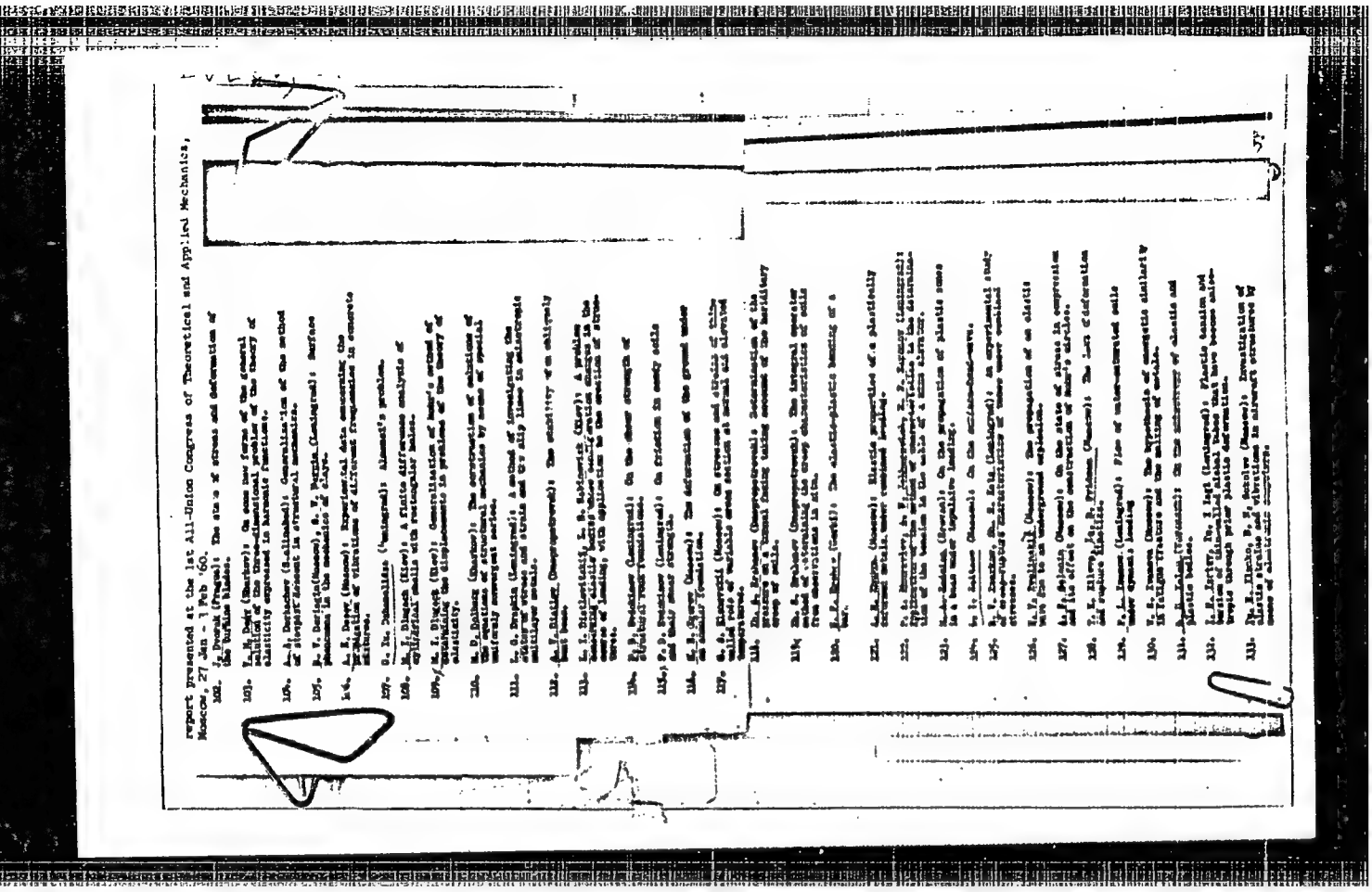

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

"The Three-Dimensional Problem of the Theory of Ideal Plasticity."

report submitted for the Xth International Congress of Applied Mechanics, Stresa, Italy, 31 Aug - 7 Sep 60.

ZHALNIN, V.A. (Voronezh); IVLEV, D.D. (Voronezh)

Theory of the pre[illegible]ng of a stamp into a plastic medium.
PMTF no.3:214-216 S-O '60. (MIRA 14:7)

1. Voronezhskiy gosudarstvennyy universitet.
(Deformations(Mechanics))
(Plasticity)

IVLEV, D.D. (Voronezh)

Inserting a thin solid of revolution into a plastic halfspace. (MIRA 14:7)
PMTF no.4:75-78 N-D '60.
(Plasticity)
(Differential equations, Partial)

IVLEV, D.D. (Moskva)

Characteristics of relations of the law of anisotropic hardening of plastic materials. Prikl.mat.i mekh. 24 no.1:144-146 Ja-F '60. (MIRA 13:6)
(Plastics)

S/179/60/000/...
E081/E535

AUTHOR: Ivlev, D.D. (Moscow)

TITLE: The Boundary of a Plastic State of a Material

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, Nr 1, p 161 (USSR)

ABSTRACT: Lee (Ref 1) proved that the boundary between a moving plastic mass and a rigid material was a slip line in the case of plane deformation. Geiringer (Ref 2) extended this proof to the general case of plane problems. Lee's proof can be extended to the three-dimensional case of deformation subject to the Tresca plasticity conditions, the boundary is then a slip surface. It is assumed that the surface S is the boundary between the plastic and rigid materials. We introduce an orthogonal curvilinear coordinate system q_i such that the equation of the surface S can be written in the form q_3 = const. Denoting the displacement velocity components by u_i, we find that $u_3 = 0$. Proceeding to the deformation

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The Boundary of a Plastic State of a Material

velocity components, the shear constituents are

$$\gamma_{13} = \frac{1}{H_3}\frac{\partial u_1}{\partial q_3} - \frac{u_1}{H_1 H_3}\frac{\partial H_1}{\partial q_3}, \quad \gamma_{23} = \frac{1}{H_3}\frac{\partial u_2}{\partial q_3} - \frac{u^2}{H_2 H_3}\frac{\partial H_2}{\partial q_2} \qquad (1)$$

where H_i are the Lamé coefficients.
In the rigid region all displacement velocity components are zero; but in the plastic region they are of finite magnitude and the products of the quantities u_1 and u_2 by q_3 therefore tend to infinity in the limit. Accordingly the components γ_{13}, γ_{23} on the boundary S grow without limit. The remaining components of the deformation velocity can easily be shown to be finite. Let us consider the relationship of plastic flow (Ref 3)

$$2\varepsilon_1 + \gamma_{12}\frac{n_2}{n_1} + \gamma_{13}\frac{n_3}{n_1} = \gamma_{12}\frac{n_1}{n_2} + 2\varepsilon_2 + \gamma_{22}\frac{n_3}{n_2} =$$

$$= \gamma_{13}\frac{n_1}{n_3} + \gamma_{23}\frac{n_2}{n_3} + 2\varepsilon_3 \qquad (2)$$

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It follows from Eq (5) that the surface S is a slip surface. As $a \to 0$, n_2 also $\to 0$ and the above deduction conserves force. The case when $a \to \infty$ can be discussed analogously.
(Note: This is a complete translation).
There are 4 references, 2 of which are Soviet and 2 English.

SUBMITTED: May 13, 1959

Card 4/4

IVLEV, D.D. (Voronezh)

On V.S.Lenskii's article "Some new data on the plasticity of metals subjected to the action of combined loads." Izv.AN SSSR, Otd.tekh. nauk.Mekh.i mashinostr. no.6:179-181 N-D '60. (MIRA 13:12)

1. Voronezhskiy gosudarstvennyy universitet.
(Deformations (Mechanics))

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SOV/40-24-1-19/28

AUTHOR: Ivlev, D. D. (Moscow)

TITLE: On the Relations of the Law of Anisotropic Hardening of Plastic Material

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol 24, Nr 1, pp 144-146 (USSR)

ABSTRACT: Using the anisotropic hardening rule formulated by R. Shield and H. Ziegler (ZAMP, 9a, 1958), the author shows that their version of an anisotropically hardening body leads to a system of hyperbolic equations and, thus, qualitatively extends the peculiarities of perfectly plastic flow to a hardening body. It is noted that this fact tallies with certain empirical data such as the formation of slip surfaces. The author considers both plane strain and three-dimensional relations. For the latter, he assumes a yield condition corresponding to the edge of the yield surface (a generalization of the Tresca yield condition):

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